DOCUMENT RESUME

ED 270 113 IR 051 528

AUTHOR Hurych, Jitka; Torok, Andrew
TITLE Identification and Analysis of Factors Affecting End Use Online Searching.
INSTITUTION Northern Illinois Univ., De Kalb.
SPONS AGENCY Council on Library Resources, Inc., Washington, D.C.
PUB DATE Oct 85
GRANT CLR-785-E
NOTE 33p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Libraries; Databases; Educational Research; *Faculty; Higher Education; Information Needs; *Library Education; Library Research; Microcomputers; *Online Searching; Online Systems; Surveys; *Users (Information)

ABSTRACT

Mail surveys designed to determine the current status of end user online searching were sent to three populations: 473 faculty members in 12 departments at 20 universities, online search coordinators in 89 academic libraries, and 15 library school educators. Direct interviews with 10 university faculty members were also conducted. Faculty were surveyed with respect to access to computing resources, familiarity with online searching, and information sources supporting teaching and research needs. Online coordinators were surveyed to identify existing and proposed library-based programs for educating end users. Library science faculty were asked to assess the impact of end user searching on libraries and library school curricula. Direct interviews with faculty who were occasional online users dealt with an evaluation of online searching as an information support for teaching and research. Faculty results indicated a high level of familiarity with online searching but only a moderate level of end user searching. Low level of searching was attributed to lack of computing resources, familiarity with only limited systems, lack of funding, and lack of perceived need. The survey of online coordinators identified several existing or proposed library programs for educating users. The overall reaction of library educators was that library schools are attempting to prepare future librarians to work with a computer-literate end-user population interested in acquiring information directly. All of the faculty members interviewed endorsed the concept of end user searching, but most professed reluctance to do their own searching. It was concluded that a vacuum still exists between the potentially useful resources of academic libraries and the information needs of potential user groups. (Author/THC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED270113

NOTE: Appendices to this report, submitted to the Council on Library Resources, have been deleted.

IDENTIFICATION AND ANALYSIS OF FACTORS AFFECTING END USE ONLINE SEARCHING

U.S. DEPARTMENT OF EDUCATION
OERI
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official position or policy.

JITKA HURYCH
ASSOCIATE PROFESSOR
FOUNDERS MEMORIAL LIBRARY

ANDREW TOROK
ASSOCIATE PROFESSOR
DEPARTMENT OF LIBRARY SCIENCE

Northern Illinois University

DeKalb, Illinois

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Andrew G. Torok
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

October, 1985

The research reported herein was performed pursuant to a grant from the Council on Library Resources. Points of view or opinions stated do not necessarily represent official Council on Library Resources position or policy.

IR051528

ABSTRACT

This project, supported by a Council on Library Resources Grant, examined the current status of end user online searching from the viewpoint of university faculty, library online coordinators, and library science educators. A survey of 4000 faculty, from 20 colleges and 12 different departments, determined that sufficient financial and computing resources are available to support end user searching although users still lack sufficient knowledge to search directly. A survey of 101 college libraries showed a high level of knowledge and activity with respect to end user searching. However, librarians are not clear on the interest level of faculty for searching directly. A survey of 55 library science educators showed awareness of end user searching but little knowledge of actual end user activity. The conclusion was that marketing is necessary for the library to become an active participant.

LIST OF FIGURES

PAGE

FIGURE 1. Department surveys sent/received/returned. 14

LIST OF TABLES

PAGE

TABLE 1 Raw data of surveys sent/received/returned from faculty 15

INTRODUCTION

Statement Of The Problem

Charles Meadow's 1979 article "Online Searching and Computer Programming"[1] was one of the first to stimulate thinking about teaching library patrons how to perform online searches. In the beginning, there seemed to be more problems than rewards. Librarians, with higher self esteem based on their knowledge of new technology, feared loss of prestige with patrons' entry into their domain. Other more concrete difficulties associated with end user searching were also articulated: proliferation and variability of online systems and databases, complexity of access protocols, and command languages, and variations in indexing vocabularies of different databases. It was felt that end users could not cope with these complex areas.

Solutions for simplification of online searching were sought on different levels, such as serious calls for standardization of search protocols and development of various simplified user friendly systems. As a result, programs such as BRS/After Dark and Knowledge Index (Dialog) were developed. These were joined by several intelligent "front ends" which make searching of complex systems transparent for the end user. Examples of the latter ones are ISI's (Institute for Scientific Information) Scimate, Information Access Company's Search Helper and Menlo Corporation's InSearch. Greater emphasis was also being placed on user education by the vendors, e.g. the Biosis Educational Program (Bioscience Information Service).[2] Vendors began to turn their advertising efforts from libraries, which they now considered to be a saturated market, to the actual users of information. They

quite aggressively began to demonstrate their systems at non-library conferences and advertise in non-library journals and magazines.[3] The personal computer market also tempted users with a potential new tool for accessing all kinds of information online.

As the experiments with end user online searching began to make news in the library literature,[4] academic librarians at first joined in these ventures rather reluctantly. However, their fear of losing status was finally overcome by their natural inclination for teaching and their pragmatism. Many of them now realized that with the spread of microcomputers in colleges and universities end user searching was inevitable. They recognized their responsibility as information professionals in training end users.

There have been many interesting developments in university libraries. Some academic libraries have developed online public access catalogs. Academic libraries have also provided access to OCLC for faculty and students. Several university libraries have established microcomputer laboratories for various library and nonlibrary applications. The concept of end user searching in one form or another has become a reality in many university libraries. Richard Janke[5] lists 37 libraries which have experimented with end user searching programs. Maredee Ojala describes end user searching in terms of categories:[6]

1. raw materials: microcomputers
   modems
   databases and user friendly simplified searching systems
2. marketing: i.e. vendors advertising and marketing to the end users

3. recognition or knowledge of online searching by users due to increased use and understanding of microcomputers, marketing efforts of vendors and librarians' efforts to educate users, especially in colleges and universities

Librarians understand that their role may change from searchers of information to teachers and consultants. It has also become obvious that not every library patron will be able or willing to search. Whether end user searching is viewed by librarians as a panacea or a nuisance, it has become part of reality. Librarians understand that if they do not deal with it, some other agency outside the library probably will. As Ojala suggests "the co-existence with end users is the best survival tactic."[7] More research on users and machines is needed to provide basis and guidance for further developments in this field. As Michael Eisenberg suggests, "future efforts to make online systems more available to occasional users should take into account the potential for applying results from articial intelligence research."[8]

Purpose of Study

There are many factors which influence the extent to which end user searching is treated by academic libraries. This project studies some of the problems facing the university faculty as potential end users of online data bases as well as problems facing the university librarians who must deal with this new reality of end user searching. Major study factors include

access to equipment, funds for search costs, preference for information sources, and familiarity with online systems and end users respectively. Library literature as well as many business and microcomputer journals were searched in order to assess the extent of end user searching and to identify the factors that influence this activity.

Literature Review

As a result of the literature search and personal contacts, other surveys dealing with similar goals, but different populations were identified, e.g. the NASA/RECON project at the University of Southwestern Louisiana, an end user survey project at Valdosta State College, and a survey of end user programs in academic libraries by Ilene Rockman at California Polytechnic State University. Since these efforts were still in progress at the time of this writing, no efforts are made to describe them.

One of the he first experiments with end-user searching were reported in 1982 by Schwerzel and others[9] at Ohio State University. Investigators noticed that search formulation and terminology were the most difficult tasks for those who tried to do their own searching.

The real pioneering efforts in this area was done by Richard Janke[10] at the University of Ottawa. In March 1983 he opened the Computer Search Service for end user searching. He also surveyed the first 25 end users and reported their enthusiastic response to the new service in his article "BRS/After Dark: the Birth of Online Self Service" which won him the second annual

Data Courier Award. In his article he predicted the new concept of "the library as the medium for the retrieval, dissemination, transmission and multipath communication of information, generally in electronic form."[11]

Janke has also been a proponent of integrating end user searching service with existing online reference services, termed "Online Reference".[12] Although he understands that searches run by librarians are probably more exhaustive, precise and sophisticated, he suggests librarians also take an active role in promoting end user searching.[13] This idea is echoed by others. Griffith believes that the role of the librarian-intermediary will expand rather than diminish with the development of online searching.

Elaine Trzebiatowski reports an enthusiastic response to end user searching, using a small sample of 20 searches by students and faculty at the University of Wisconsin at Stout. She concludes that certain searches can be performed successfully by end users on a menu-driven system.[14]

Some librarians believe that the demands on the staff and library in general will increase as a result of end user online searching and that the users will recognize the value of library services even more than in the past. This idea is stressed in the articles of Halperin and Pagell,[15] Griffith[16] and others. In relation to this new demand on library staff and services, Marydee Ojala[17] stresses the need for end user search policies and guidelines which libraries should develop in order to deal with this new library service.

Many librarians have found that instruction is a necessity in end user searching. This has been stressed over and over in the literature as well as in personal conversations with coordinators of the new online reference. Richard Janke speaks about pre-research counseling[18] in the library and even suggests that librarians consider counseling those who run their own searches outside the library, e.g. in their offices or at home. Linda Friend[19] considers instruction and librarians' assistance to be vital in end user searching. In her experiment with 22 searchers at Pennsylvania State University she offered two class sessions, with a detailed worksheet and an appointment before the actual session at the terminal. She noticed that end users had problems with Boolean logic, with analysis of concepts and with precision. As a result of librarian's assistance, she noted an increasing respect for the librarian and concluded that "Librarians have a unique opportunity in this age of information to play a major role in the online education of many individuals."[20]

With respect to equipment access, David B. Welch[21] surveyed 293 colleges and universities to determine the extent to which libraries are involved in making microcomputers available to patrons and circulating the software. He found that 13% of those libraries surveyed circulated software and 28% had microcomputers available for patrons. Welch makes an argument for libraries collecting all kinds of materials, regardless of format. He also speaks about proliferation of microcomputers in academic libraries, a fact which may directly affect future expansion of

end user searching.

University faculty use of databases was a subject of a survey by Borgman and others.[22] They surveyed 237 faculty at 10 universities in the USA and Canada. Faculty from 6 departments in sciences and social sciences were randomly selected. The survey was aimed at both users and non-users of databases. On the basis of 19% response, the authors concluded that a strong demand for data bases by faculty end users does not yet exist, that personal searches by university faculty are not widespread, and that even awareness of available data bases is quite limited. They also noted university faculty lack of interest and lack of understanding of computer data bases and their potential for scholarship.

The authors major conclusions were:

1. Librarians' assumptions about database usage may differ substantially from those of faculty.

2. Information seeking habits of researchers and the effect of online searching upon those habits deserve further research.

3. University faculty should be educated about the value of databases in their work.[23]

An analysis of these and other surveys indicates that a clear picture of end user searching is still missing. Furthermore, it appears that both major populations in question, i.e. librarians and university faculty, know somewhat less of each other's behavior than might be assumed. The problem of formulating a clear picture of end user searching is further

clouded by a rather transitory environment created by rapidly changing technologies, changing patterns of information creation, storage, and use, and an understanding of the librarian's role.

Libraries may well provide for access to hardware, but without considering the marketing of services, or the provision of funds and time for searching they may also find that a disproportionate share of the budget is being spent on meeting information needs of a very small proportion of the total potential population.

In order to prolong the value of the present research effort, both equipment and behavioral concerns were addressed. It must be emphasized that the present investigation is purely descriptive, with the hope that the results can be used to formulate intelligent hypotheses as a basis for subsequent research. It must be further emphasized, that the study focuses on academia. The online environment in business, industry and government is considered substantially different, and perhaps more predictable in light of more clearly defined job objectives, thus beyond the scope of the present investigation. Studies such as done by Bowden[24] may provide interesting results for future comparison.

METHODOLOGY

Introduction

The specific research questions as explicated in the appended proposal (Appendix I.) are:

1. To what extent are researchers in academic institutions aware of the services and products of online vendors?
2. How much interest is there in (a) using the services of a professional intermediary for online searching; and (b) searching directly?
3. What is the nature of and how available are hardware and software materials for end user searching?
4. What factors are likely to affect the outcome of successful end user searching?
5. Will there be a demand for the professional intermediary in the event end user searching becomes prevalent?
6. What, if any, effect will end user searching have on the services of university libraries (e.g., document delivery)?

The methodology for finding answers to these questions consisted of three mail surveys sent to three different populations, and direct interviews with users of online reference services. The three populations consisted of: University faculty from 20 academic institutions, online search coordinators in 101 university libraries, and online educators in 65 accredited library science programs. Direct interviews were conducted at one academic institution, (Northern Illinois

University). An exhaustive literature search also provided insight into the general nature of the problem, including data from related surveys conducted by other researchers. Considering the descriptive nature of the investigation, no specific hypotheses were formulated. Consequently, analysis of the survey data was limited to using SPSS (Statistical Package for the Social Sciences) for generating basic frequencies. Due to the diversity and volume of the variables concerned, the following discussion will be divided according to each of the data sources mentioned above. Furthermore, only those variables pertaining directly to the research questions listed above will be mentioned in the text.

The data sources will be treated in the following order:

1. Survey of University Faculty
2. Survey of University Online Search Coordinators
3. Survey of Online Educators
4. Interviews With End-users of Online Services

Survey of University Faculty

Since a great deal is known and has been written about use of online services in business and industry, this study selected university faculty as subjects for investigation. In contrast to the for-profit sector, it is generally held that faculty have fewer financial and computing resources available to them for conducting their own online searches. In addition, university

faculty constitute a more heterogeneous population with less-clearly defined job objectives than their counterparts in business and industry. Although it is commonly expected that, in addition to teaching responsibilities, university faculty engage in research and share in the administrative maintenance of the university, their information needs are less clearly dictated by academic policy than for instance in the corporate sector. As a result, particularly when considering the range of academic disciplines in the humanities, social sciences, and physical sciences, conjecture with regard to faculty use of online services or a desire to search remote data bases directly is virtually impossible.

In the past few years, some data on online searching in academic institutions has been made available as a result of statistics compiled by online search librarians. However, with the surge in sales of microcomputers, end-user search software programs, and database vendors marketing efforts in the potential end user sector, it has become more difficult to keep track of just what is going on in academia. Thus the first questionnaire attempted to obtain a better understanding of three basic areas. These are: 1. To what extent do faculty have access to equipment which could be used for searching? 2. How widespread is knowledge of online searching in general, and more specifically, what is their desire for doing online searches? and 3. What is the general feeling of faculty toward computers and computer-derived information to support teaching and research interests?

In order to limit this study to manageable proportions, no attempt was made to study disciplinary variations or carry out other correlations and cross-tabulations. It is also expected that the information pertaining to present use of computers may already be out of date, although this information is expected to provide substantive data reflecting a period in technological developments. The information pertaining to information needs should remain viable for several more years and lend itself to subsequent analysis.

The sample for the first survey consisted of 4,000 university faculty drawn from 20 academic institutions. Twelve department/schools were selected to represent the three major disciplines commonly referred to as the physical sciences, social sciences, and humanities. Departmental units at each university ranged from 9 to 12, the mode being 11. For convenience they will hereafter be referred to as college and department, without consideration to how each unit would prefer to be called. Colleges were selected from the list of 113 institutions that were members of the Association of Research Libraries (ACRL) in 1982. Of the 113 members, 101 were colleges, the remainder being non-academic institutions such as the Library of Congress. Non-random selection of the colleges was based on current-fund revenues received from the Federal Government as indicated in the 1982 Digest of Educational Statistics. The five highest-funded and five lowest-funded colleges were selected in the event that financial resources were to become a future research question.

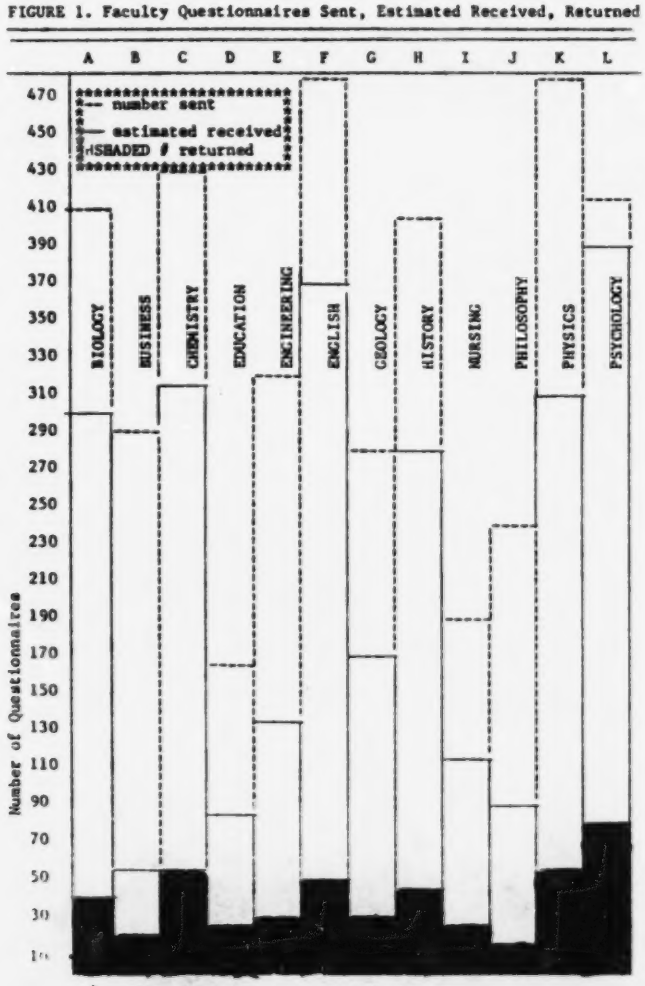
The assumption that Federal funding in some way trickles down as a direct benefit to faculty, or that research productivity is in some way related to total information resources remain broader questions not presently treated. The remaining 10 colleges were selected to provide a geographic mix. Questionnaires were validated by 15 subjects across 5 departments at Northern Illinois University.

Questionnaires were distributed by sending a packet with an average of 25 questionnaires addressed to department chairs, requesting them to be distributed to their faculty.

Actual numbers of faculty per department were determined by scanning college catalogs. In general, departments with fewer faculty received a higher proportion of questionnaires than large departments, but all department received at least one form for every two faculty. Chairs were urged to distribute the forms to senior continuing faculty, and then to lower ranked faculty. They were also encouraged to make additional copies if desired. The rationale for this method of distribution was that more questionnaires could be sent with the amount of funds available for postage. The disadvantage to this method is that some department chairs refused to distribute the questionnaires. Three chairs sent letters to the effect that their faculties were too busy doing research to respond. In retrospect, bulk mailing might be better if addressed to the department secretary.

No questionnaires were returned from 74 of the 216 departments receiving them. It was not known how many non-responses were due to the questionnaires not being distributed. A total of 473 useable questionnaires were returned, resulting in a non-adjusted return rate of approximately 12% or a return rate of 20% if adjusted for non-responding departments. Figure 1 presents a graph with the approximate total number of questionnaires sent, the number sent to responding departments, and the actual number returned.

FIGURE 1. Faculty Questionnaires Sent, Estimated Received, Returned



BEST COPY AVAILABLE

In two instances, departments returned questionnaires en mass and requested more, the remainder were returned by individuals in the self-contained post-paid mailer. The response rate was deemed sufficient due to the relatively homogeneous distribution of responses across departments, thus no follow-up was attempted. The number of questionnaires sent, over number returned, are displayed in Table 1.

TABLE 1. - Faculty Questionnaires Sent to and returned by Departments

Departments / Colleges	A	B	C	D	E	F	G	H	I	J	K	L
Johns Hopkins	30/7	10/0	20/2	0/0	15/0	10/0	15/0	20/0	0/0	10/0	20/0	15/4
MIT	35/0	45/0	20/0	0/0	30/0	10/1	20/0	10/0	0/0	15/2	55/0	10/0
Stanford	20/3	0/0	20/2	0/0	20/0	20/1	20/2	20/3	0/0	20/2	20/0	20/3
Washington	20/0	25/0	20/2	10/0	20/0	15/3	20/2	20/11	10/0	10/0	15/0	10/2
Arizona State	10/3	10/1	20/2	15/7	10/0	30/3	10/3	15/3	20/7	15/1	20/2	20/3
Delaware	25/2	15/6	25/7	10/4	10/1	35/5	5/0	25/2	15/4	10/2	10/2	10/1
Florida State	20/3	20/0	20/3	20/0	10/2	10/0	20/1	10/0	20/3	10/2	20/1	15/2
Illinois	15/0	25/0	20/0	10/0	25/3	25/3	10/0	13/4	10/0	5/0	25/0	25/5
Kentucky	20/2	15/0	15/2	15/1	10/0	20/0	10/1	20/2	20/0	10/1	25/5	15/5
Cal-Berkeley	15/0	35/0	35/3	0/0	30/0	40/4	15/1	40/6	0/0	10/0	10/0	30/4
Colorado U.	10/3	10/0	20/0	20/3	10/2	30/2	15/1	15/0	0/0	10/0	25/7	30/5
Michigan	40/1	0/0	30/10	0/0	15/4	40/6	15/0	35/0	0/0	15/0	35/6	45/12
Northwestern	15/4	0/0	25/3	20/0	0/0	30/0	10/0	20/1	0/0	10/0	25/3	20/4
Ohio State	15/2	10/3	30/4	10/0	35/0	30/4	15/3	25/3	0/0	15/0	30/0	30/5
Oregon	20/0	10/0	20/5	15/6	0/0	20/0	20/3	20/1	0/0	20/0	20/4	20/6
Pennsylvania U.	25/3	15/3	15/0	0/0	10/0	25/0	5/2	20/1	20/0	10/1	30/3	20/3
Princeton	20/4	0/0	15/0	0/0	20/2	30/3	15/0	25/3	0/0	15/0	35/7	20/1
Rochester	20/1	0/0	20/4	0/0	15/3	25/3	10/2	20/5	30/3	10/2	20/3	25/6
Utah	25/1	15/1	20/11	0/0	15/0	20/2	15/0	15/0	25/5	10/0	20/2	15/3
Wisconsin	10/3	30/6	30/0	15/3	15/5	20/9	10/4	15/2	15/6	10/1	20/4	15/1

KEY
A-Biology
B-Business
C-Chemistry
D-Education
E-Engineering
F-English
G-Geology
H-History
I-Nursing
J-Philosophy
K-Physics
L-Psychology

Most of the open ended questions are coded with a yes/no to indicate a response. Actual responses are not always provided.

This questionnaire focused primarily on the first 3 research questions. The first question asked "To what extent are researchers in academic institutions aware of the services and products of

BEST COPY AVAILABLE

online vendors?" Although not posed as a testable hypothesis it was felt that the faculty for the most part are not familiar with or do not have a good idea of the strengths and limitations of services offered by online vendors. It could be postulated that faculty in the physical sciences and health professions might account for the majority of library-based online search users but it would be difficult to determine the extent to which non-library searchers interact with online databases.

The second question addressed the use of information sources and intermediary searchers. The information-seeking behavior of researchers has been often studied, and it can be generally concluded that they prefer to use sources of information close at hand, such as colleagues or materials in the office. It may be entirely possible that faculty have both the resources and the knowledge needed for searching, but do not have the same perception of the value of online searching [to meet information needs] that librarians have. In the haste to provide service, many librarians forget that a research project may take several years and that the type of information provided by online databases may be needed infrequently. A faculty member's perception may be than online searching is not worth the effort, either of searching directly or letting the librarian search. This study began with the premise that familiarity with online services and access to equipment were pre-requisites to an evaluation of the worth of these services. Thus questions pertaining to an actual evaluation of online systems were not posed. Rather, the

research began with a survey of existing resources.
The third question dealt specifically with access to resources. The question of resources encompasses both the hardware needed for searching as well as funds needed to pay for the searches. One might expect to find varying levels of access to correlate with the nature of research efforts and teaching responsibilities. It may be more likely for an instructor of computer science to have a terminal or computer access than say a faculty member in philosophy. Other departments are less clearly defineable. Education faculty in particular have become heavy microcomputer users, but short of searching ERIC (Publications and database of the Educational Resources Information Center: U.S. Department of Education) it would be difficult to predict familiarity with other online databases or vendors.

It is obvious from the responses that subsequent extrapolation of results must be limited to that part of the population with access to computers. It would be difficult to determine the extend to which non-respondents have access to computers although university mainframe computers and departmental resources are also probably available to other faculty in departments from which responses were received. Surprisingly, 91% (N=430) of respondents indicated familiarity with online searching. However, 59% (N=248) of the cases indicated only a low level of familiarity. One needs to consider that "online searching" is a fairly generic expression, even though librarians place it in the context of bibliographic and numeric database searching. Thus, it would be difficult to

determine the context in which the "yes" cases referred to familiarity with online searching. Even in the general sense of the phrase, only 31% (N=146) indicated having used an online system. Unfortunately the instrument did not distinguish between types of use, e.g. direct or indirect use of online generated information. Furthermore, the question of use occurred after a listing of major vendors, perhaps implying a use of these vendors even though another question addressed this issue.

With respect to equipment access, 96% (N=454) indicated some access to computer equipment, particularly in their offices. Of these, 92% (N=416) were to microcomputers, but only 50% (N=209) had modems. 63% (N=297) indicated access to hardware at home, presumably microcomputers.

In terms of financial resources, grants were the major source for paying for searches, with department funds accounting for the second most frequently used source. "No funds" accounted for the major reason for not searching, interestingly followed shortly by no need to search.

The question posed in the proposal with respect to faculty searching for themselves produced some interesting results. 73% of the respondents to the question asking them "Would you like to learn how to do online searching" indicated that they would, although only 17% had received any instruction in searching. At the same time, only 12% indicated that they did not search the databases themselves as a result of lacking appropriate skills. Libraries can be credited with doing a good job of publicizing

online search services as 86% of the respondents indicated that the library offers online searching. There is no question that the demand for either online searching by intermediaries or nonmediated (or end user) searching directly exists. With respect to these points 93% and 88% of the respondents respectively replied "yes" and only a small percentage of respondents gave any reason for not considering online searching in the future. In order to further identify end user online training programs and to obtain a picture from the intermediary's view-point, a survey of online search coordinators was performed.

Survey of Online Coordinators in University Libraries

Library online search coordinators at all 101 academic institutions from which the first survey sample was drawn were sent a brief questionnaire The extremely good return rate of 89% indicates the relevancy of the research questions. Essentially, the coordinators were asked: 1. If they were aware of any end user searching being conducted by faculty; 2. if they have or are considering the start of end user online search programs, and if so., 3. what equipment, software, and files were being used .

Some of the more interesting results are presented in the following discussion.

Although 76% of the librarians (online search coordinators) were aware of end-user online search activity occuring at their

college, only 15% had actively sought to determine how much overall interest there was on the subject. 23% of the librarians indicated that a library program was already in place, indicating that the need for such programs was taken for granted, rather than in response to user demands. Only 30% of the respondents, who indicated that an end-user online program was in place, felt that there was an impact on reference services, or other services such as inter-library loan. At the same time, 63% felt that there was no impact. It was not determined if the impact had already been absorbed into the current level of services, and perhaps those respondents indicating an impact were still in the transition stage of developing programs. With regard to systems used for end user searching, BRS After Dark greatly outdistanced other search services with a total of 21% (N=19) and Knowledge Index (Dialog) coming in a distant second at 10%.

As might be expected, librarians are well aware of the end user searching phenomenon. The general response appears to be an inclination to work with faculty, as well as to make equipment available for searching. Considering that approximately 1/2 of computer-using faculty have modems and ready access to hardware, the librarian's main contribution is more likely to occur in the reference function, that is, to educate users in searching a wealth of information resources and providing full-text documents. Whether librarians can reach out to faculty offices, homes and laboratories where the equipment is being used remains a serious marketing question. Placing hardware and software in

the library may only better serve those faculty already accustomed to being in the library. Considering that only about half of the faculty responding to the first survey go to the library themselves and would prefer to send someone or that a larger percentage prefer to use office files or call colleagues, it would be difficult to envision them going to the library to do an online search. As a side note, a suprisingly large number of the faculty respondents (77%) seldom or never call the library for information. Basic behavioral issues, as illustrated by Zipf's principle of least effort, remain the fundamental problems to be examined.

Survey of Online Educators in Library Schools

The purpose of the survey sent to library school faculty was mainly to supplement the literature search and the information sought from library online search coordinators. The sample consisted of 50 full-time and a few part-time library school faculty listed in the 1984 directory of the Association for Library and Information Science Education (ALISE) who had indicated online searching as a special interest area. The sample was selected to achieve a geographic mix and to include individuals who have published in this area.

Given the broad nature of the questions, all being open-ended, and the low response rate, no statistical analysis was attempted. Thus the following general summary is presented.

Of the 15 responses, no new information sources or programs beyond those identified in the preliminary literature search were

identified. The respondents felt, for the most part, that although university faculty have access to hardware, professors are not aware of end user online searching. One respondent did indicate that Dialog (Lockheed) seminars, held at their college, are drawing a larger proportion of non-librarians that in the past. A few respondents mentioned individual efforts to educate students in other departments, such as programs offered by Chemical Abstracts Service to chemistry departments and professors with joint vendor account numbers. Most of the respondents indicated that their library school was already using or considering using microcomputer-based software, sometimes termed end user software, because of the menu-driven query languages. Although of use to librarians, these software packages are often termed end user packages because of relatively easy use and because of vendors' marketing efforts to this population. The overall reaction to the survey of library educators is that library schools are attempting to prepare future librarians for the environment in which they will work, namely, a computer-literate end-user population interested in acquiring information directly, rather than through an intermediary. The preparation consists of training in newer methods of information access such as microcomputer-based software programs. Thus, end users can continue to look to librarians for leadership as trainers and facilitators for information access. It is also readily apparent that librarians will continue to serve only a small portion of the total potential

user population, and, if anything, users will rely even less on the library for their information needs. What is less clear is whether library science students training for computer database searching receive the appropriate mix of courses for actuating a holistic approach to meeting information needs. That is, perhaps gaining appropriate computer search skills in online courses, a behavioural perspective in user services courses, knowledge of online and hardcopy data sources from literature and reference classes, and appropriate marketing and communication skills from other library science courses. These issues will be the focus of the Online Educators Program at the 1986 Winter meeting of ALISE (Association for Library and Information Science Education).

Granted that this survey raised more questions than it answered it also paved the way for more informative direct interviews with faculty who have or are using online information sources.

Direct Interviews With Faculty Using Online Search Services

As indicated earlier, the purpose of these interviews was to obtain first-hand information from faculty known to be familiar with online search services, either provided by the library or from other sources. 10 individuals known to belong to this population were selected from the faculty at Northern Illinois University (NIU: DeKalb, Illinois). Individuals selected were known to the project investigators and had used the library online search services at NIU. Although a variety of biases may be inferred, the general purpose of the interviews was to round

out possible information sources dealing with the major research questions, rather than an attempt to obtain statistically significant data. The overall reaction of these individuals and several other NIU faculty to library online search services has already been documented in the article by Hurych and Hilchey (listed in the bibliography).

Although the concept of end user searching was strongly endorsed by all the subjects, most professed reluctance for considering searching. The major factors addressed in the first survey, namely equipment, costs, software, time, and search skills all played a part. However, the most interesting generally held reason for reluctance to search was the inability of individual files in providing the appropriate vocabulary for describing search needs. Despite online thesauri and other search aids, little confidence was shown in the search process by even those subjects who expressed high familiarity with search skills. At one point, members of the Chemistry department had even shared a Dialog Indentification number, but dropped it for lack of use. The faculty generally considered the online search as supplementary to a basic literature search using other means, in the hopes of retrieving a fugitive reference.

With respect to end user microcomputer based search packages, none of the subjects indicated any familiarity. However, the chemistry department was considering the CAS (Chemical Abstracts Services) program for teaching graduate students to do their own searching via departmental terminals.

Although by no means conclusive, the results of this survey seem to indicate that data base structure and retrieval mechanisms still pose the biggest hindrance to end-user online searching. This leaves room for the hope that librarians may continue to play an important role in translating the mysticism of information storage and retrieval into the language of the end-user.

Final Notes

This project, based on responses from college faculty, online search coordinators, and library science educators verified much of what is generally known about user behavior with respect to meeting information needs. New data, albeit transitory, consisted of a capsule picture of faculty access to resources needed for searching and general familiarity with online services. One of the major contributions of this research was to bring together these pieces of information as they relate to a single population, rather than in separate studies of different populations. The general conclusion appears to be that a vacuum still exists between the potentially useful resources of academic libraries and the information needs of potential user groups. The general relationship of need to demand was not considered since the present methodology was not configured to produce answers for the pressing question of whether all faculty really need libraries. Perhaps combined survey research and bibliometric studies may provide the appropriate mix of methodologies for such answers. In the meantime, it is clear that end user online searching efforts are underway in all

sectors. It can only be hoped that their paths will cross.

As a further conclusion, it is difficult to imagine that end user online searching will serve to further the library's mission as an information intermediary. Any system that further isolates the user from the library will also diminish a potential user's awareness of library services or collections. Although the hope may be echoed that end user online searching will bring individuals into contact with information resources obtainable from libraries, developments in document delivery by vendors and database producers may negate any library advantage. Increases in full text and numeric databases will also continue to erode traditional collection development practices in that useful information sources will be obtained through sources bypassing the library. Traditional interlibrary loan serves the user unable to pay for materials, whereas in the present study population, most materials appeared to be chargable to grants or departmental funds. The convenience of online ordering of sources, without the need to encumber personal funds, may reduce the library's ability to develop relevant collections. These conclusions are in contrast with some of the sources discussed in the literature review. What is certain is that the future is extremely difficult to predict. Perhaps what is needed is the development of sensitive instruments which can quickly record trends, and the development of flexible library systems which can readily adapt to change.

Future Analysis

Some additional questions which the survey results may answer are the following:

1. Do faculty with modems know more about online searching than faculty without modems?
2. Are there disciplinary variations?
3. Is Federal Funding a determinate?
4. Is preference for information a determinate?
5. How do faculty compare with counterparts in business/ industry?
6. What other variables can account for behavior, e.g. private vs. public institutions?

REFERENCES

1. Meadow, Charles T. "Online Searching and Computer Programming: Some Behavioral Similarities (or...Why End Users Will Eventually Take Over the Terminal)," Online 3 (1); 49-52 (Jan, 1979.)

2. Elias, Arthur, et a. "End User Education -A Design Study," Online Review. 4 (2): 15-19, (June, 1980.)

3. Seymour, Jim. "Data Bases: Managers Go Online." Today's Office, 36-40, (Oct. 15, 1984.)

4. Walton, Kenneth R. and Particia K. Dedert. "Experiences at Exxon in Training End-users to Search Technical Databases Online", Online 7 (5): 42-50, (Sept. 1983.)

5. Janke, Richard. "Online After Six: End User searching Comes of Age", Online 8 (6): 15-29, (Nov. 1984.)

6. Ojala, Marydee. "End User Searching and its Implications for Librarians." Special Libraries 76: 93-9, (Spring 1985).

7. ibid.

8. Eisenberg, Michael The Direct Use of Online Bibliographic Information Systems by Untrained Users: A Review of Research. ERIC Clearinghouse on Information Resources, Syracuse, NY, 1983. (Ed 238 440).

9. Schwerzel, Sharon W., Susan V. Emerson,and David L. Johnson. "Self Evaluation of Competencies in Online Searching by End Users After Basic Training." Proceeding of the 45th ASIS Annual meeting, 19: 272-75, 1982.

10. Janke, Richard. "BRS/After Dark; the Birth of Online Self Service." Online 7: 12-29, (Sept. 1983.)

11. ibid.

12. Janke, "Online After Six,"

13. Griffiths, Jose-Marie. "Microcomputers and Online Activities: An Examination of Interrelationships and Implications for the Future." ASIS Bulletin 10 (4): 11-14 April 1984.

14. Trzebiatowski, Elaine. "End User Study on BRS/After Dark" RQ 23 (4): 446-450, (Summer 1984).

15. Halperin, Michael and Ruth A. Pagell. "Free Do-it-yourself Online Searching...What to Expect" Online 9: 82-84, (March, 1985).

16. Griffiths, "Microcomputers...,"

17. Ojala, "End User Searching...,"

18. Janke, Richard. "Presearch Counseling for Client Searchers (End Users)" Online 9: 13-26, (Sept. 1985).

19. Friend, Linda. "Independence at the Terminal: Training Student End Users To Do Online Searching." J. Acad. Lbnshp 11(2): 136-141, (July, 1985).

20. ibid.

21. Welch, David B. "The Circulation of Microcomputer Software in Academic Libraries and Copyright Implications." J. Acad Lbnshp 10 (6) 262-266, (Nov. 1984).

22. Borgman, Christine K. Donald O. Case and Dorothy Ingebretsen. "University Faculty use of Computerized Databases: An Assessment of Needs and Resources." Online Review 9 (4): 307-323, 1985.

23. ibid.

24. Bowden, Phillip, "Online Database Searching by Research Economists." Unpublished research paper, Northern Illinois University, 1985.